UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 258

Contribution from the Office of Experiment Stations
A. C. TRUE, Director

Washington, D. C. July 13, 1915.

LESSONS IN ELEMENTARY AGRICULTURE FOR ALABAMA SCHOOLS

OUTLINED BY MONTHS

By

E. A. MILLER, Specialist in Agricultural Education

CONTENTS

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CONTENTS.

INTRODUCTION.

The fact that many States now require the teaching of agriculture in the elementary grades makes it important that much attention be given to the subject matter. This bulletin presents lessons in agriculture adapted to the conditions in Alabama. The purpose is to suggest a plan by which the States may adapt instruction in agriculture to local needs. The selecting of a particular State in this instance has been made to show the manner in which such a plan may be definitely worked out. Although the department does not contemplate issuing publications of this kind for other States, it stands ready to cooperate in making studies as to agricultural and school conditions and in outlining courses adapted to the conditions.

A monthly sequence plan is followed in the presentation of these lesson topics, the purpose being to teach principles at the season when they are or should be practiced. Only the salient features of each lesson topic are outlined in this publication, but specific references are made to the State adopted textbook in agriculture and to

[1] Prepared under the direction of C. H. Lane, Chief Specialist in Agricultural Education, Office of Experiment Stations, United States Department of Agriculture, in cooperation with the Alabama Polytechnic Institute, C. C. Thach, president, Auburn, Ala.

Note.—This bulletin is prepared especially for the use of rural school teachers in Alabama.

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bulletins of the Alabama Polytechnic Institute, Auburn, Ala., and to Farmers' Bulletins of the United States Department of Agriculture, Washington, D. C. The references are made for two purposes, namely, to supplement the textbook material and to provide a reading course for the teacher. Any teacher who secures these bulletins and studies them carefully will have completed a good elementary course in agriculture. It is suggested that agriculture and some other subject such as physiology be alternated throughout the school year. Two lessons a week for eight months are necessary to complete the work in agriculture. If the school year is shorter, it will be necessary to have three lessons a week to complete the course.

Practical exercises are suggested in connection with each lesson. If this course is to be made most effective, however, the practical work should take the direction very largely of club activities or home projects.

The correlation exercises in connection with each lesson are intended to be suggestive. The teacher should vitalize the other public-school subjects by utilizing things most familiar to the pupils, such as farm, home, and school-life facts and incidents. It is understood that the correlation suggestions are not necessarily a part of the lesson in connection with which they appear, but are to give local coloring to the other subjects.

SEPTEMBER.

LESSON ONE.

SUBJECT: SOIL. TOPIC: WINTER COVER CROPS.

Importance.—During the summer and early fall the plant life in the soil makes available much valuable plant food. Unless this is conserved the weathering agencies leach it out and wash it away during the winter months.

Kinds of cover crops.—(1) Small grains, such as rye, barley, wheat, and oats; (2) legumes, such as crimson clover, bur clover, and vetch.

Seeding.—Such crops are seeded while other crops are occupying the ground, hence the necessity of hand sowing or using a one-horse drill.

Class assignment.—Duggar's,[1] pp. 86–92. Teachers supplement this lesson with notes from Farmers' Buls.[2] 326, 427, and 507; Alabama Experiment Station Buls. 147 and 165.

Practical exercises.—Study roots of leguminous plants and compare them with the roots of nonleguminous plants. Note the tubercles.

[1] Duggar's Agriculture for Southern Schools.

[2] Farmers' Bulletins may be had, as long as available, by writing to the United States Department of Agriculture, Washington, D. C.

Of what value are they? Club members should sow cover crops on plats.

Correlations.—Language and drawing: Make drawing and describe a leguminous plant, including roots with tubercles, stem, leaves, and seed pods. History: Read "Alfalfa," p. 229, Farm Life Reader, Book Five.

LESSON TWO.

SUBJECT: CROPS. TOPIC: SEED-CORN SELECTION.

Select in the field stalks that have surpassed their neighbors under average conditions as to distance and soil fertility; that are thrifty, of average height, strong, and tapering; that have strong brace roots and an abundance of leaves; that have at least two good ears at a medium height, possessing moderately long shanks, close-fitting husks, and well-covered tips.

Mark ears that are 8 to 10 inches long, with an average circumference three-fourths of the length of the ear; that have medium-sized cobs, straight rows of kernels extending to the tips and butts; and that have long, wedge-shaped, firmly set kernels true to type as to denting and color.

Storing seed.—Later, when seed is mature, gather and store out of reach of small animals. If necessary, fumigate for weevils or grain moths.

Class assignment.—Duggar's, pp. 129–135. Teachers should supplement the lesson with notes from Farmers' Buls. 313, 415, 537, and 617.

Practical exercises.—Teacher should accompany pupils to near-by field and give them practice in selecting proper stalks and marking ears. Club members should select seed for the next crop.

Correlations.—Language: Write an account of the field trip. Drawing: Ideal and improper ears, ideal and ill-shaped grains furnish drawing material. History: Study the development of the corn-club movement. Organize a school club. Get extension literature from the Alabama Polytechnic Institute, Auburn, Ala. Arithmetic: Collect community data on increased yields due to seed selection and develop problems adapted to the needs of the pupils.

LESSON THREE.

SUBJECT: POULTRY. TOPIC: TYPES AND BREEDS.

Class assignment.—Duggar's, pp. 310–313. Teacher should supplement the lesson with notes from Farmers' Buls. 51 and 528.

Practical work.—Make a poultry survey of the community, ascertaining and tabulating the different types and breeds. Secure the help of the members of the class and other pupils.

Correlations.—Language: Tabulating the facts with reference to the poultry of the community furnishes language material. Drawing: Make sketches of feathers from different parts of the body of an individual of each breed studied. Arithmetic: Develop problems on the value of the poultry of the community as indicated by the survey.

LESSON FOUR.

SUBJECT: SOILS. TOPIC: MOISTURE.

Kinds of moisture.—Free, capillary. Each defined. Movements of each kind.

Effects of moisture on breaking land, subsoil plowing, preparing seed bed.

Class assignment.—Duggar's, pp. 65–68 and 70–72.

Practical exercises.—Perform exercises suggested in Duggar's, pp. 66, 67, and 69.

Correlations.—Language: Write up results of practical exercises and copy in notebooks. Drawing: Make sketches of materials used in practical exercises.

LESSON FIVE.

SUBJECT: CROPS. TOPIC: SMALL GRAINS AND CLOVERS.

Small grains.—Wheat, oats, rye, barley. Preparation of soil, time of sowing, fertilizers, rate of seeding, varieties, treatment to prevent diseases.

Clovers.—Kinds, uses, time, manner and rate of seeding, need and methods of inoculation.

Class assignment.—Duggar's, pp. 136–143 and 174, 177, and 178. Teacher should supplement the lesson with notes from Farmers' Buls. 427, 436, 518, 550, 579, and 646.

Practical exercises.—(1) Collect in bottles, bring to school, and label the different kinds and varieties of grains and clovers studied in this lesson. See Farmers' Bul. 586. (2) Study these seeds to learn to identify them. (3) Take a given amount of seed of each kind, pick out the good, pure seeds and separate from the impure and the unsound. Would it be advisable to sow impure seed?

Correlations.—Language: Develop the notes taken in connection with the foregoing exercises and copy in the notebooks. Drawing: Make enlarged drawings of each kind of seed, giving proper color. Arithmetic: Develop problems on the purity of seed, based on results obtained in the practical exercises.

LESSON SIX.

SUBJECT: FARM ANIMALS. TOPIC: SOW AND PIG MANAGEMENT.

Since it is possible to have fall, winter, and early spring pastures in Alabama, a fall litter of pigs is desirable. September seems to be the most desirable month for the pigs to be born. The following points should be emphasized in this connection: (1) Providing the farrowing pen with fenders to prevent mashing or overlying pigs, (2) providing bedding for young pigs, (3) feeding the sow, (4) teaching the young pigs to eat, (5) feeding pigs before weaning, (6) time of weaning, and (7) selecting breeding stock.

Class assignment.—The teacher should be provided with Farmers' Buls. 205 and 566. Give pupils notes covering the foregoing points found on pages 28–34 in No. 205, and pages 9, 10, and 11 in No. 566. See also Farmers' Bul. 411.

Practical exercises.—Insist on pig-club members getting their pigs in condition for the county fair. Make a portable hog house like the one described on page 12 of Farmers' Bul. 566. This may be used for a permanent house. One of its advantages is that it can be moved from place to place.

Correlations.—Language: Describe a portable hog house. Drawings: Make simple drawings of the portable hog house and the open farrowing pen. Geography: Iowa, Illinois, Missouri, Indiana, Nebraska, Ohio, and Kansas are the seven leading hog-producing States. Locate them on the map. What is the relation between the crops grown and raising hogs? Is it necessary for Alabama to buy pork from these States? History: Organize a pig club. Study the pig-club development in the State. Arithmetic: Find the cost of constructing portable hog houses. Base calculations on size of house and local prices of materials.

LESSON SEVEN.

SUBJECT: INJURIOUS INSECTS. TOPICS: BOLL WEEVIL, POTATO BEETLE, COTTON BOLLWORM.

Class assignment.—Duggar's, pp. 260–271. Teachers should supplement the lesson with notes from Farmers' Buls. 290, 500, and 512; Alabama Experiment Station Buls. 178, 164, and 146.

Practical exercises.—Collect specimens of insects studied, place them in bottles, and bring to school. Furnish them with materials on which to feed and study their development.

Correlations.—Language: Copy in notebooks results of observations with insects. Drawing: Make sketches of the insects in the different stages of their life history. Also make drawings of the parts of plants attacked showing the nature of the injury. History:

Study the origin, spread, and extent of damage of the boll weevil. Arithmetic: Secure data from the homes of the pupils and develop problems as to the damage done to crops by insects studied in this lesson.

LESSON EIGHT.

SUBJECT: FARM ANIMALS. TOPICS: (1) POULTRY MANAGEMENT; (2) DISEASES—DIARRHEA, SCALY LEGS.

Class assignment.—Duggar's, pp. 306–309. The teacher should supplement the lesson with notes from Farmers' Buls. 287 and 530.

Practical exercises.—Have pupils report to the class any diseases or insect pests of poultry in the community. Compare symptoms with those found under the different diseases in Farmers' Bul. 530. Study remedies and apply them. Have each member of the class make drinking fountain for poultry.

Correlations.—Language: Have each pupil describe the poultry watering device used at his home. Drawing: Sketch a drinking fountain. History: Organize a poultry club. Read Farmers' Bul. 562. Arithmetic: Have members of class report the loss of poultry at their homes during the year due to disease. Develop problems on the value of the poultry lost.

OCTOBER.

LESSON ONE.

SUBJECT: POULTRY. TOPIC: HOUSES.

The site should be convenient to the attendant, well drained, and protected from exposure.

The house should be so constructed as to be convenient, cheerful, dry, well ventilated, free from drafts, and economical.

The styles are colony, continuous, and double-decked.

The parts.—The floor may be cement, board, or earth; walls, single with outside coat of paper or double; the roof, shed, gable, combination, A-shaped, or sloping front. There should be 4 to 6 square feet for each bird. For ventilation have an open front facing the south.

Fixtures.—These consist of droppings board, roosts, nests, feed hoppers, water pans, and dust baths.

Class assignment.—Farmers' Buls. 287, pp. 7–11, and 528, p. 9; Duggar's, p. 309.

Practical exercises.—(1) Have pupils make drinking fountains. See Duggar's, p. 309. (2) Require pupils to report on the poultry houses at their homes. If possible have pupils visit a modern poultry house in the community.

Correlations.—Language: A written description of the poultry house at each pupil's home. Drawing: Sketch drinking fountains

and feed hoppers. Geography: State the geographical conditions to be considered in locating and building a poultry house. Arithmetic: Have pupils submit plans for poultry houses; develop problems on the cost of material.

LESSON TWO.

SUBJECT: CROPS. TOPIC: THE COTTON PLANT.

Subtopics.—Importance of the crop; kinds of cotton; short staple upland varieties; satisfactory varieties; and improving cotton.

Class assignment.—Duggar's, pp. 144–150; supplement with notes from Alabama Experiment Station Buls. 130 and 153.

Practical exercises.—Have members of the class bring to school the different varieties of cotton found in the community. Classify the varieties under the main groups, p. 147, Duggar's.

Correlations.—Language: Have pupils write letters to the United States Department of Agriculture, Washington, D. C., and the Alabama Experiment Station, Auburn, Ala., for the bulletins referred to in this publication. Select and mail the best letter in each case. Drawing: Require pupils to sketch stalks and bolls of varieties of cotton examined. Arithmetic: Pick and weigh 25 bolls of each variety studied. Develop problems as to the number of bolls per pound. How many stalks per acre of each variety examined would be necessary to produce 1,500 pounds of seed cotton?

LESSON THREE.

SUBJECT: HORTICULTURE. TOPIC: HOME ORCHARD.

Destroying sources of disease.—Remove from the orchard and burn all rubbish, mummies, decayed fruit, and dead trees.

Selecting site for new orchard.—Select a good loam soil, elevated, with north or northwestern exposure and protected from strong prevailing winds.

Preparation of soil.—Remove stumps, stones, and rubbish; break the soil thoroughly to a reasonable depth and harrow thoroughly.

Class assignment.—Supplement the foregoing outline with notes from Alabama Experiment Station Buls. 132 and 156, and Farmers' Buls. 154, 491, and 631.

Practical exercises.—Practice distinguishing diseases by the appearances of mummies of apples, peaches, pears, and quinces. See Alabama Experiment Station Bul. 132. Mummies should be brought to school for this purpose.

Correlations.—Language and drawing: Make written descriptions and drawings of mummified fruit. Geography: Have each pupil outline the home farm, showing the location of the orchard with reference to dwelling, barns, etc. History: List the leading varieties

of apples and peaches, and have each member of the class prepare an account covering the date of introduction, productivity, keeping and shipping qualities of some one variety. Arithmetic: Make out an order for a given number of trees and find the cost based on nursery prices.

LESSON FOUR.

SUBJECT: FARM ANIMALS. TOPICS: (1) MANAGEMENT OF MEAT HOGS; (2) PROVIDING WINTER PASTURES.

Management of meat hogs.—It is too expensive to fatten meat hogs on corn, hence a fall pasture of peanuts, cowpeas, or soy beans should be ready for use this month. Turn hogs on pasture and supplement with corn. When the pasture is exhausted finish off the hogs with corn.

Winter pastures.—Any one of the following crops furnishes pasturage within 60 to 120 days: Rye, wheat, rape, bur clover, oats, and vetch.

Class assignment.—Give the pupils notes on the foregoing topics from Farmers' Bul. 411 and Alabama Experiment Station Bul. 168.

Practical exercises.—Have each boy in the class assume charge of at least one pig that is to be fattened. The pig should be weighed to begin with. If abundant pasturage is furnished, feed the pig 2 per cent or one-fiftieth of its weight of concentrated food each day. If pasturage is not provided, feed 4 per cent or one twenty-fifth of the pig's weight of concentrated food. The pig should be weighed once each week. When the pasture is exhausted place the pig in a small lot and finish off with concentrated feed.

Correlations.—Language: Have pupils prepare tables to keep weekly records of the weights of the pigs and daily records of the weight of the feed. History: Require members of the class to make a survey of the community as to the breeds of hogs and write accounts covering the dates on which each breed was introduced and the success with which each has been grown. Arithmetic: Develop problems as to cost of feeding the pupils' pigs.

LESSON FIVE.

SUBJECT: DAIRYING. TOPIC: CARE OF YOUNG CALVES.

Feeding.—Calves should be taken from the mother when 2 days old and fed out of a bucket. Feed each calf 1½ to 2 quarts of whole milk three times a day until 2 weeks old. At two weeks of age begin to substitute some skim milk for whole milk and decrease the whole milk so that the calf will be on a skim-milk ration when a month old. When the calf is 2 weeks old teach it to eat ground and

cracked food by rubbing bran on its nose just after feeding it milk. Calves learn early to eat hay and should be fed a liberal amount of good hay. They should have an abundance of water and salt and should have access to a pasture.

Shelter and attention.—Sheds should be provided at night and on rainy, stormy days. Should disorder of the alimentary canal develop as a result of feeding skim milk the following treatments are suggested: (1) Tablespoonful of castor oil. (2) Mix an ounce of formalin with a pint of water and give five teaspoonfuls in milk at night.

Practical exercises.—Raise funds and secure a Babcock tester. One may be bought for $5. Learn to test milk for butter fat. Have pupils bring to school samples of milk for this purpose.

Correlations.—Language: Record in the notebook results of milk tests. Drawing: Require pupils to draw the devices used in testing milk. Geography: Jefferson, Mobile, Montgomery, and Blount are among the leading counties engaged in the dairy business. Locate these counties on the State map and suggest reasons for their engaging in this industry. Arithmetic: Develop problems as to the amount and value of butter fat produced by each cow tested.

LESSON SIX.

SUBJECT: CROPS. TOPIC: SWEET POTATOES.

Subtopics.—(1) Varieties, (2) when to harvest, (3) how to harvest, (4) handling, (5) storing, (6) selecting seed, and (7) marketing.

Class assignment.—Duggar's, pp. 163, 164. Supplement the lesson with notes from Farmers' Buls. 533 and 548.

Practical exercises.—(*a*) Have members of the class bring to school specimens of each variety of sweet potatoes grown at their homes. Learn to identify each variety. (*b*) Have each member make a written statement covering the following points as practiced at home: (1) Tools used in digging potatoes, (2) vessels used in carrying potatoes to storing place, (3) kind of potatoes selected for seed, and (4) method of storing.

Correlations.—Language: The foregoing report provides written work. Drawing: Different varieties of potatoes and tools used in digging furnish material for drawing exercises. Arithmetic: Have pupils report areas and yields and develop problems as to the yield per acre in each case, the average yield per acre in the community, and the value of the potato crop of community based on present prices. Estimate profit to the community if the potato crop should be well handled and stored and sold in midwinter and in early spring.

LESSON SEVEN.

SUBJECT: POULTRY. TOPIC: FEEDING LAYING HENS.

Subtopics.—(1) The importance of feeding, (2) kinds of feeds, (3) methods of feeding, and (4) grits and other substances.

Class assignments.—Duggar's, pp. 306–309. Supplement the lesson with notes from Farmers' Buls. 287, pp. 19–26, and 528, p. 10.

Practical exercises.—Practice testing eggs. See directions in Farmers' Buls. 287, p. 28, and 562, pp. 9, 10.

Correlations.—Language: Describe a good egg and a bad egg as they appear when tested. Drawing: Make drawings of good and bad eggs as they appear when tested. Geography: Answer the following questions: Are the eggs tested in the homes of the community before being marketed? Are eggs sold to a general merchant, poultry dealer, or shipped by parcel post direct to the consumer? Are eggs sold by the dozen or by the pound? Locate on the map the community's principal egg market. How are eggs prepared to ship by parcel post? (See Farmers' Bul. 594.) Arithmetic: Develop problems on the cost of feeding flocks of chickens at homes of the pupils or flocks belonging to club members. Estimate 4 pounds of dry feed daily to each 100 pounds of live weight of poultry.

LESSON EIGHT.

SUBJECT: CROPS. TOPICS: (1) SUGAR CANE; (2) PEANUTS.

Sugar cane.—The plant, varieties, soils, fertilizers, yields, uses.

Peanuts.—Importance, varieties, harvesting, uses, best type of soil for successful growing.

Class assignment.—Duggar's, pp. 154–161, 165, 166. Supplement lesson with notes from Farmers' Bul. 431.

Practical exercises.—(1) From what is sugar cane grown? Examine several stalks to note the number of nodes (joints), the length of the internodes at different parts of the stalk, the buds from which young plants grow. (2) Carefully remove a number of peanut plants from the soil. Examine the roots for tubercles. Are peanuts borne on roots or stems? Take the nuts from several vines and measure or weigh each lot separately.

Correlations.—Language and drawing: Require members of the class to write descriptions and make drawings of peanut plant, showing all the parts. Arithmetic: Count the peanut plants on a plat 20 feet square. Find the average yield per vine. From these figures develop problems as to the yield per acre and the value of an acre's yield at local prices.

NOVEMBER.

LESSON ONE.

SUBJECT: CROPS. TOPIC: THE BLACK WEEVIL OF CORN.

Subtopics.—Life history, damage done; preventive measures—seed selection, value of husk covering, resistant varieties, harvesting, storing; fumigation—room, dose, application of carbon disulphid, precautions.

Class assignment.—Alabama Experiment Station Bul. 176. The teacher should give pupils notes on the subtopics from this bulletin.

Practical exercises.—(1) One ounce carbon disulphid is required as a dose to fumigate 3 cubic feet of ear corn. Secure a small box, fill it with ears of corn affected with weevils, apply the proper dose over the surface of the corn, cover the box tightly, and keep it away from fire. After 7 to 10 days remove the cover, ventilate the box, examine the corn, and note results. (2) Secure 10 ears of sound corn, 10 partially damaged by weevils, and 10 seriously damaged. Shell each lot, carefully weigh equal measurements of each, and compare.

Correlations.—Language: Describe an ideal weevil resistant ear of corn. Drawing: Make drawings of ears and grains seriously affected by weevils. Arithmetic: From the facts ascertained in exercise 2 develop problems as to the damage done the crops from which the ears were selected.

LESSON TWO.

SUBJECT: HORTICULTURE. TOPIC: SETTING AN ORCHARD.

Distance between trees.—Apples: 16 by 32 feet, 20 by 20 feet, 24 by 24 feet. Good distance for the cultivation of other crops. Peaches: Trees may be set in squares or triangles, the rows parallel. Squares 18 by 18 feet seem preferable. Plums, cherries, and pears usually require same distance as peaches. Pears and cherries may require greater distance.

Seasonal varieties.—Apples: Yellow Transparent, Red Astrachan, Red June, Golden Sweet, Maiden Blush, Horse, Hackworth, Ben Davis, Winesap, Shockley, Mammoth Blacktwig, Yates, Reese Seedling. Peaches: Mayflower, Sneed, Greensboro, Carman, Hiley, Champion, Belle of Georgia, Elberta, Crawford Late. Plums: Red June, Abundance, Wild Goose, Burbank, Gold, Satsuma. Cherries: Early Richmond, English Marrello. Figs: Celeste or Celestial, Brown Turkey, Lemon. Pear: Leconte, Kiefer, Goshen, Russet or Apple.

Digging holes, pruning tops and roots.—These are important features of the lesson, and should be given proper emphasis.

Class assignment.—Duggar's, pp. 219–224. Teacher should supplement lesson with notes from Farmers' Buls. 113, 154, 482, 491, 631, 632, and 633.

Practical work.—Make a trip to a farm where fruit trees are being set. Take notes on the method. Set trees and shrubbery on school grounds this month. See Farmers' Buls. 185 and 218.

Correlations.—Language: Require of the pupils written reports as to the kinds and varieties of fruits at their homes. Drawing: Have each pupil submit a plan for a home orchard, showing the location of the different kinds of fruits. History: Study the horticultural law of the State. Secure a copy from the Alabama Polytechnic Institute, Auburn, Ala. Arithmetic: At the prevailing prices of plants develop problems to determine the cost of the orchards planned by the pupils.

LESSON THREE.

SUBJECT: FARM ANIMALS. TOPIC: HOG HOUSES, PENS, TROUGHS, AND FENCES.

Houses.—Permanent and portable. Features of construction: Location, light, ventilation, warmth, and cleanliness.

Pens.—The number, size, location.

Troughs.—Kinds, material, length, braces.

Fencing.—Permanent, portable, and hurdles. Purposes and material.

Class assignment.—Cover the foregoing outline with notes from Farmers' Buls. 205 and 438.

Practical work.—(1) Make a trip with the class to a modern hog house. Study and take notes on its construction. (2) Require each member of the class to submit a written report covering the conditions at home with reference to these points: The housing, troughs, pens, and pasture fencing for hogs. Discuss these reports in class.

Correlations.—Language: Written work is provided for in exercise 2. Drawing: Draw to scale ground plan of a hog house, also different kinds of hog troughs. Arithmetic: Develop problems on the cost of hog houses, fences, and troughs.

LESSON FOUR.

SUBJECT: SOILS. TOPIC: APPLICATION OF LIME.

Reasons for applying lime at this time.—(1) Land is being plowed, (2) young plant roots are not injured, and (3) acts upon turned stubble or vegetable matter.

How lime helps the soil.—(1) Supplies plant food, (2) makes other plant food available, (3) sweetens sour soils, and (4) makes compact soils porous and porous soils compact. Crops not benefited or indifferent to lime. How often should lime be applied, and in what quantities?

Class assignment.—Duggar's, pp. 112–115. Supplement the lesson with notes from Farmers' Bul. 77, Alabama Experiment Station Bul. 161.

Practical exercises.—See "Exercise" and "Note to teacher," Duggar's, p. 115.

Correlations.—Language: Describe the things that take place in the foregoing exercise. Arithmetic: At the prevailing price of lime, find the cost of applying a ton per acre to a 10-acre field. What is the weight of a barrel of lime? How many barrels would be necessary to apply on a 10-acre field?

LESSON FIVE.

SUBJECT: DAIRYING. TOPICS: PRODUCTION AND CARE OF MILK.

Class assignment.—Duggar's, pp. 323–325. Supplement with notes from Farmers' Buls. 349 and 541.

Practical exercises.—See "Note to teacher," Duggar's, p. 325.

Correlations.—Language: Have each pupil write and read in class an account covering such points as precautions observed for cleanliness in milking, vessels used to keep milk pure, and method of keeping it cool. Drawing: Sketch different kinds of milk pails. History and geography: Milk is a natural and complete food. Its use antedates history. List the dairy products used in the community. Which are bought? Wisconsin is the leading State in dairying. Locate this State on the map. Arithmetic: Make a survey of the community as to number of cows giving milk and the amount of milk produced. Develop problems to determine the average production per cow, the total production per year, and the value based on local prices.

LESSON SIX.

SUBJECT: POULTRY. TOPIC: MARKETING EGGS.

Subtopics.—Testing, sorting, packing, and shipping; methods of selling; parcel post—kinds of containers, securing containers, reaching the consumer.

Class assignment.—Give notes from Farmers' Buls. 287, pp. 40, 41, and 594, pp. 5–13.

Practical exercises.—Either have some member of the class to bring to school a basket of eggs or go with the class to the pupil's home and practice testing and sorting. See Farmers' Bul. 562.

Correlations.—Language: Make a community poultry survey covering such points as the number of hens, the weekly egg production, and the method of selling eggs. Have the pupils prepare blanks for this purpose and compile the facts.

Arithmetic.—Develop problems based on the foregoing facts.

NOTE.—Supplement this lesson with a study of bad habits of poultry. See Farmers' Bul. 287, p. 47.

LESSON SEVEN.

SUBJECT: FARM ANIMALS. TOPIC: WINTER FEEDING OF BABY BEEVES, MATURE BEEVES, AND HORSES.

Baby beeves.—Fattening and marketing calves from 8 months to a year old may be made profitable. The high price paid for beef animals in the winter and early spring makes it advisable to begin now to get animals ready for market. Pastures and open fields should be utilized as long as profitable. These should be supplemented with a part ration at the outset. The ration should be gradually increased as the pastures give way and as the fattening period advances. The fattening period should usually extend approximately 100 days.

Rations.—(1) Cottonseed meal, 2 parts; corn-and-cob meal, 1 part; equal parts of cottonseed hulls and legume hay. (2) Cottonseed meal and equal parts cottonseed hulls and legume hay. (3) Cottonseed meal, 1 part; corn-and-cob meal, 2 parts; and equal parts of cottonseed hulls and legume hay. Two to 3 pounds of cottonseed meal, 1 to 4 pounds of corn-and-cob meal, and 5 to 8 pounds each of cottonseed hulls and legume hay provide a satisfactory ration.

Beef cattle.—Begin now to feed mature beef animals.

Rations.—At the outset feed 2 pounds of cotton seed or cottonseed meal, 25 pounds of silage or its equivalent of cottonseed hulls and hay (1 pound of hay or hulls to 2 pounds of silage). Gradually increase this ration so that at the end of the feeding period (100 days) each animal is receiving 6 pounds of meal and 45 pounds of silage or the equivalent.

Horses.—Rations for young animals: One pound of grain and 2 pounds of hay for each 100 pounds of live weight. (1) Corn, 1 part; oats, 1 part; bran, 1 part; legume hay and stover, 1 part each. (2) Corn, 1 part; cottonseed meal, one-half part; bran, 1 part; and hay, 2 parts.

Rations for work horses: (1) Oats, 7 pounds; sorghum hay, 7 pounds. (2) Corn, 10 pounds; cottonseed meal, 2 pounds; and mixed hay, 14 pounds.

Class assignment.—Supplement the foregoing with notes from United States Department of Agriculture Buls. 73 and 110; Alabama Experiment Station Buls. 128, 150, and 158; Farmers' Bul. 580.

Practical exercises.—(1) Make a community survey of the breeds of beef animals. The survey should include the pure-bred animals, kinds of breeds, and number of each; grade animals, kinds of breeds, and number of each; and the number of scrubs. (2) An interesting project for boys is to have charge of a baby beef. Begin now to prepare it for market. To begin with, weigh it and start it on a half ration. Gradually increase the feed until the calf is on a full ration. Keep a daily record of the feed and a weekly record of the calf's weight.

Correlations.—Language: Prepare sheets for tabulating the facts secured by the survey and for keeping feed and weight records of the calf. Geography: Does the community raise its supply of mules and horses? If not, from what States do they come? Locate these States on the map. The proceeds of what crops are given in exchange for horses and mules? Arithmetic: Develop problems to determine the amount of money spent by the community each year for mules and horses.

LESSON EIGHT.

SUBJECT: GARDENING. TOPICS: COLD FRAME, SEASONAL PLANTING, COLLECTING AND PREPARING COMPOST FOR SPRING GARDEN.

Cold frame.—The site should have a southern exposure, should be well drained, and should have good, rich soil.

Seasonal planting.—Start in the cold frame lettuce, cabbage, and cauliflower. Set in the open sweet peas and all kinds of flowering bulbs.

Preparing compost.—Select a dry shed and begin collecting manure and preparing compost for the spring garden.

Class assignment.—Duggar's, pp. 185–188; Farmers' Buls. 185 and 218; Alabama Experiment Station Circ. 14, parts 1 and 2.

Practical exercises.—(1) Make a cold frame for the school grounds. Sow lettuce, cabbage, and cauliflower seeds. (2) Tomato-club girls should have compost heaps prepared for the next crop.

Correlations.—Language and drawing: Have each pupil write a description and make a drawing of the cold frame. Geography: Is there a nearby market for winter-grown vegetables? Compare the railroad and marketing advantages of the community with those of counties like Cullman, Sumter, Chilton, Conecuh, Escambia, Mobile, Montgomery, and Jefferson. Arithmetic: Find cost of the material in the cold frame. Find the area of the cold frame in square inches. How many plants may be started in this frame if 4 square inches are allowed to each plant?

DECEMBER.

LESSON ONE.

SUBJECT: SOILS. TOPIC: CROP ROTATION.

Purposes.—Improve the soil, get rid of weeds, avoid plant diseases and insect pests, provide suitable crops.

Kinds of crops.—Money crops, feed crops, soil-improving crops.

Class assignment.—Duggar's, pp. 116–122. See copy of soil survey of the county.

Practical exercises.—(1) Have pupils prepare and submit three-year and four-year rotation courses, keeping in mind community conditions and needs. Remember that enriching the soil is the ultimate purpose. (2) Visit a farm where a good system of rotation is practiced. Take notes.

Correlations.—Language: Written work is provided in writing out in good form the rotation courses. Drawing: Require the pupils to outline the home farm or the farm visited showing the divisions made for purposes of rotation. Indicate the crops grown the present year. Arithmetic: Develop problems on the value of rotation courses. See United States Department of Agriculture Bul. 132, p. 41.

LESSON TWO.

SUBJECT: CROPS. TOPIC: CORN JUDGING.

Subtopics.—Object of corn judging, use of score card, selecting good ears, arranging an exhibit.

Class assignment.—Duggar's, pp. 129–135. Supplement the lesson with notes from Farmers' Buls. 415 and 617.

Practical exercises.—See "Exercise" and "Note to teacher," Duggar's, p. 135.

Correlations.—Language: Require each corn-club member to submit a written report covering such points as cost of production, kinds of fertilizers, method of applying fertilizers, yields, value, exhibits made, and prizes won. Arithmetic: Select five choice ears and five ordinary ears. Weigh each lot in the ear. How many ears of each are required to produce a bushel of 70 pounds? Shell and weigh each lot. How many ears of each are required to make a bushel of 56 pounds?

LESSON THREE.

SUBJECT: FARM ANIMALS. TOPICS: TYPES AND BREEDS OF HORSES AND CATTLE.

Class assignment.—Duggar's, pp. 284–294. Supplement the lesson with notes from Farmers' Buls. 612 and 619.

Practical exercises.—(1) Gradually increase the feed to baby beeves. Keep a daily record of the feed weights and weekly record of the calf's weight. See that the calf is well housed at night and on

stormy days. (2) Pupils that have not baby beeves should assume the care of colts. Follow rations suggested the previous month. See that the colts are well housed at night and on stormy days. Begin handling the colts as much as possible. Get them accustomed to the halter so that they will lead and stand when tied. (3) Make a survey of the community as to the horses and mules. Determine the different breeds of horses, the number of pure-bred animals and the number of grades of each breed, the number of scrubs, and the number of mules.

Correlations.—Language: Keeping records of projects provides written work. Make sheets for tabulating the facts obtained in making the animal survey. Arithmetic: Find the number and value of the mules and horses of the community. Find the cost of feeding baby beeves for the month and the cost per pound of increase in weight. Determine the number and the value of the horses and mules in the community.

LESSON FOUR.

SUBJECT: DAIRYING. TOPIC: BUTTER MAKING.

Subtopics.—Ripening cream, starters, determining the ripeness of cream, churning, washing butter, salting butter, working, printing, and packing butter, and dairy equipment.

Class assignment.—Duggar's, pp. 326–329. Supplement the lesson with notes from Farmers' Buls. 349 and 541.

Practical exercises.—(1) Require a report from each pupil with reference to the method of butter making at the home. (2) If there is a commercial dairy in the community, visit it with the class to observe the equipment and the method employed in making butter. Take notes.

Correlations.—Language: Writing up reports and developing notes taken on the visit to the dairy furnish language work. Drawing: Vessels and equipment used in butter making provide materials for drawing exercises. Geography: In 1909 New York produced and sold $77,807,161 worth of dairy products; Wisconsin, $53,868,028: Iowa, $31,196,883; and Alabama, $6,396,198. Locate these States on the map. Compare the climatic and agricultural conditions of these States. Should Alabama buy dairy products from other States? Arithmetic: See "Problems," Duggar's, p. 329.

LESSON FIVE.

SUBJECT: POULTRY. TOPICS: (1) FATTENING AND MARKETING, (2) SELECTING THE BREEDING PENS.

Fattening.—Pen fattening, crate fattening, cramming, and feeds for fattening.

Marketing.—Killing, dressing, packing, and shipping live poultry.

Breeding pen.—Age, vigor, and relationship of the male; age, qualities, and number of hens.

Class assignment.—Give pupils notes from Farmers' Buls. 287, pp. 27–28, 36–38; 355, pp. 31–34.

Practical exercises.—(1) Poultry-club members should select their breeding pens and prepare for the work of the new year. (1) Let each member of the class take charge of a few fowls at home for the purpose of fattening them for the Christmas market. Try the different methods of fattening and report the results.

Correlations.—Language: Require club members to submit reports covering the results of the year's work with poultry. Have pupils write letters to poultry dealers asking for literature and prices. Arithmetic: Develop problems based on the reports of club members. See United States Department of Agriculture Bul. 132, p. 39, December.

LESSON SIX.

SUBJECT: SOILS. TOPIC: TERRACING AND DITCHING.

Terracing.—As soon as crops are removed and before winter rains set in, the old terraces should be built up and new ones laid out and thrown up.

Ditching.—Lands needing drainage, benefits from drainage, classes of drains.

Class assignment.—Duggar's, pp. 74–81. Supplement the lesson with notes from United States Department of Agriculture Bul. 91 and Farmers' Bul. 158.

Practical exercises.—(1) Have pupils secure materials and construct a triangular terrace level as described in Farmers' Bul. 158, pp. 15–16. (2) Make a trip with the class to a farm where tile drains are being laid. Observe the need of draining and the method employed. Take notes on the kinds and cost of materials used.

Correlations.—Language and drawing: Draw to scale and write an account of the materials used and the steps taken in constructing a terrace level. Arithmetic: Find the cost of the material used in constructing the terrace level. Develop problems on the cost of laying tile drains at the farm visited. See United States Department of Agriculture Bul. 132, p. 41, May exercises.

LESSON SEVEN.

SUBJECT: FARM ANIMALS. TOPIC: SAVING MEAT.

Dressing.—Killing, scalding, scraping, and cleaning.

Keeping.—Cooling the carcass and cutting.

Curing.—Vessels, preservatives, brine, and dry curing.

Recipes for special curing.—Salt pork, sugar-cured hams and bacon, dry-cured hams, headcheese, pickled feet, lard, and sausage.

Class assignment.—Give the class notes from Farmers' Buls. 183 and 391; Alabama Experiment Station Bul. 166.

Practical exercises.—(1) Pig-club members can get practice in dressing their own pigs. (2) Have pupils report in writing the practice at their homes as to dressing, keeping, and curing meat.

Correlations.—Language: Written work is provided in "Practical exercise 2." Arithmetic: Have pupils report weights of their butchered pigs. Find the total weight of meat produced in the community, the average amount per family, and the value of the total amount produced. See United States Department of Agriculture Bul. 132, p. 39, for exercises in arithmetic.

LESSON EIGHT.

SUBJECT: FARM IMPLEMENTS AND MACHINERY—ROADS.

Class assignment.—Duggar's, pp. 333–340. Supplement the lesson with notes from Farmers' Buls. 270, 347, and 597.

Practical exercises.—(1) The teacher should take the class to a farm well equipped with machinery or to a hardware store. Make lists of the various farm implements and note their uses. The teacher should secure the cooperation of the farmer or the hardware merchant in this work. Under the direction of the farmer or merchant take down and set up a rather complicated machine. (2) Secure the cooperation of the patrons and grade the school-ground walks. After grading the walks dress them with a layer of gravel, chert, shells, or cinders.

Correlations.—Language: Copy the list of farm implements in the class notebooks. Drawing: Outline a split-log drag. Geography: Locate on the county map the principal public highways. Locate on the State map the counties that have good roads. History: What has the county done for the improvement of roads? What system of keeping the roads in condition is in vogue? How have improved roads affected the price of land in the country? Arithmetic: Make a survey of the farm tools and implements in the community. Find their value. What was the amount of the road-bond issue in the county? How many miles of road were constructed? What was the average cost per mile? Find the cost of split-log and plank drags described in Farmers' Bul. 597.

JANUARY.

LESSON ONE.

SUBJECT: IMPROVING SOIL. TOPIC: MANURE MANAGEMENT.

Applying manure to the soil.—Methods: Placing in heaps about the field, broadcasting, applying in hill or drill with seed.

Storing manure.—Providing shed, packing, applying moisture.

Class assignment.—Duggar's, pp. 93–96. Supplement the lesson with notes from Farmers' Bul. 192.

Practical exercises.—(1) Require the members of the class to report the methods employed at their homes in the management of manure. (2) Club members should begin spreading manure on their plats.

Correlations.—Arithmetic: Keep a record of the amount and value of manure applied to the soil of garden or field projects.

LESSON TWO.

SUBJECT: CROPS. TOPIC: TESTING SEED CORN.

The vitality of the seed determines the regularity of the stand and the vigor of the plants, hence the importance of good seed. The vitality of seed may be determined by the appearance of the kernel and by the germinating test.

Class assignment.—Duggar's, pp. 130–132. Supplement the lesson with notes from Farmers' Buls. 253, 415, 428, 537, and 617.

Practical exercises.—(1) Make and equip a germinating box as described in Farmers' Bul. 253, p. 8. Conduct a germinating test at school, using selected seed corn. (2) Each club member should test his seed corn this month.

Correlations.—Language and drawing: Describe and draw to scale the germinating box. Arithmetic: Develop problems based on the results of the germinating test showing the possible loss in yield sustained by those who do not test seed. See United States Department of Agriculture Bul. 132.

LESSON THREE.

SUBJECT: HOME GARDEN. TOPICS: (1) MAKING THE HOTBED; (2) PREPARING THE GARDEN.

The hotbed.—Selecting site, preparing manure, making frame and excavation, making hotbed, sowing seed.

Preparing the garden.—Spreading compost, breaking soil and preparing seed bed, compounding fertilizers.

Class assignment.—Duggar's, pp. 185–191. Supplement with notes from Farmers' Bul. 255 and Alabama Experiment Station Circ. 14, Parts I and II.

Practical exercises.—(1) Make a hotbed for the school. (2) Club members should make hotbeds at their homes. Compost should be spread over the plats and the soil plowed thoroughly.

Correlations.—Language: Write an account of the steps taken in making a hotbed. Drawing: Have each pupil draw to scale the home garden and the school garden. Arithmetic: Find the cost of making a hotbed, taking into account labor, lumber, and manure. If plants stand 1½ inches apart each way, how many can be started in the school hotbed? Find the areas of the home and school gardens in the drawing exercises.

LESSON FOUR.

SUBJECT: DAIRYING. TOPIC: BREEDS.

Class assignment.—Duggar's, pp. 295–298. Supplement the lesson with notes from Farmers' Bul. 106.

Practical exercises.—Make a survey of the community as to the breeds of dairy cattle and the number of animals of each breed. Let the records show the number of pure-bred animals of each breed, the number of grades of each breed, and the number of "scrubs." Have the pupils secure this information from their homes and from the homes of their immediate neighbors. Where possible secure the estimated value of each animal.

Correlations.—Language: Tabulating the facts obtained in the foregoing survey provides written work. Geography: Make a map of the community and locate thereon the homes of farmers who own pure-bred dairy cows. History: Have members of the class prepare a written account covering these points—the dates when the different breeds were introduced into the community, the extent each breed has been used, and the comparative value of each breed. Arithmetic: Develop problems to determine the number of pure-bred animals, the number of grades and the number of scrubs, the fractional part the pure breds, the grades, and the scrubs each is to the whole number of cattle; the percentage in each case. Find the value of the different breeds and of all the dairy cattle in the community.

LESSON FIVE.

SUBJECT: SOIL. TOPIC: CONSERVING SOIL MOISTURE.

How to secure and retain a supply of soil moisture sufficient to produce an abundant crop is one of the important problems of the farmer. As a result of the winter rains a supply of moisture should be accumulating, hence the necessity of studying the relation of water to the soil.

Class assignment.—Duggar's, pp. 65–69.

Practical exercises.—(1) Perform the exercises suggested in the text in connection with this lesson. Also see exercises in Farmers' Bul. 218.

Correlations.—Language: Have pupils take notes in connection with the practical exercises. Write them up in full and copy in the notebook. Arithmetic: Develop problems based on results of the experiments to determine the weight of water in different areas of soil, taking into account the depth of breaking the land.

LESSON SIX.

SUBJECT: POULTRY. TOPICS: (1) CARE OF BREEDING HENS; (2) EGGS FOR INCUBATION.

Care of breeding hens.—Care during the mating season and feed for breeding hens.

Eggs for incubation.—Collecting, selecting, and keeping.

Class assignment.—Give the class notes covering the foregoing outline from Farmers' Buls. 287 and 562.

Practical exercises.—(1) Members of the poultry club should follow carefully the foregoing instructions as they apply to the work of feeding and caring for hens, and collecting, selecting, and keeping eggs. (2) Those members that mean to start their project with eggs should decide on a breed and place an order for eggs. (3) Each member should be provided with an egg tester as described in Farmers' Bul. 562. (4) Keep records of the daily rations fed and the eggs collected.

Correlations.—Language: Provide tables for keeping records of feeding rations and eggs collected. Arithmetic: Develop problems on the cost of feeding the club members' flocks or flocks at the homes of the pupils; also on the value of eggs produced for incubation. Based on the number produced and the cost of the care of the hens, what do the eggs cost per dozen?

LESSON SEVEN.

SUBJECT: FARM ANIMALS. TOPICS: (1) BREED OF HOGS; (2) SELECTING BROOD SOW.

Class assignment.—Breeds: Duggar's, pp. 303–305. Selecting brood sow: Cover this topic with notes from Farmers' Buls. 205 and 566.

Practical exercises.—(1) Pig-club members should select and breed their sows this month. (2) Members who assume responsibility for only one pig should arrange to secure a pure-bred animal. For instructions as to managing the pig see Farmers' Bul. 566 and Alabama Experiment Station Bul. 168. (3) Make a community hog survey. Determine the number of pure-bred animals of each breed, the number of grades of each breed, and the number of scrubs.

Correlations.—Language: Prepare tables for collecting and tabulating the facts with reference to the hog survey. Geography: Fill in on the community maps used for locating dairy cattle the homes where pure-bred hogs are kept. History: Have the pupils prepare accounts in connection with the several breeds as to the dates of introduction, the extent to which grown, and the comparative success of each. Arithmetic: Develop problems to determine the number and value of the different breeds, the whole number and value of the hogs in the community, and the percentage of pure-bred hogs.

LESSON EIGHT.

SUBJECT: PLANTS. TOPIC: PROPAGATION.

Subtopics.—(1) Methods: By seed, by parts of plants. (2) Parts of plants: Cuttings, grafts. (3) Kinds of grafts and directions for grafting.

Class assignment.—Duggar's, pp. 38–45. Supplement the lesson with notes from Farmers' Buls. 157 and 218.

Practical exercises.—(1) Have the pupils practice making whip and cleft grafts, as shown on page 42 of Duggar's. Use small twigs and limbs of plum trees, persimmon trees, apple trees, and the like. (2) After pupils have become proficient in making grafts have them make permanent grafts. (3) Make cuttings of grapes and shrubbery and set them on the school ground. (4) Practice making grafting wax. See Duggar's, p. 45.

Correlations.—Language and drawing: Write descriptions and make sketches of grafts made. Arithmetic: Develop problems on the cost of materials required to make given amounts of grafting wax.

FEBRUARY.

LESSON ONE.

SUBJECT: FERTILIZERS. TOPIC: ESSENTIAL ELEMENTS.

Subtopics.—Nitrogen, phosphoric acid, potash, and lime—their sources.

Class assignment.—Duggar's, pp. 97–101. Supplement the lesson with notes from Farmers' Buls. 44 and 398.

Practical exercises.—See "Exercise" and "Note to the teacher," Duggar's, p. 101.

Correlations.—Geography: Sodium nitrate comes from Chile, South America; kainit from Germany; phosphate rock from South Carolina, Tennessee, and Florida; dried blood and tankage from the great packing houses, such as those located at Chicago, Omaha, Kansas City, and Dallas. Locate these on the map and trace the routes of travel from your community to these countries, States, and cities.

LESSON TWO.

SUBJECT: FERTILIZERS. TOPICS: (1) CALCULATING FORMULAS; (2) HOME MIXING.

Calculating formulas.—Interpreting formulas, finding the commercial value.

Home mixing.—Advantages, fillers.

Class assignment.—Duggar's, pp. 102–107, and Appendix, p. 1.

Practical exercises.—(1) Club members should compound their fertilizers. If it is convenient, take the class to the home of some club member or some farmer who is mixing fertilizers and give the pupils practice in this work. (2) Have members of the class report the brands and formulas of fertilizers used at their homes, also the purpose for which each is used.

Correlations.—Arithmetic: See "Problems" in Duggar's, p. 107; Farmers' Bul. 44, p. 14; United States Department of Agriculture Bul. 132.

LESSON THREE.

SUBJECT: FERTILIZERS. TOPIC: SUITING FERTILIZERS TO SOILS AND CROPS.

Class assignment.—Duggar's, pp. 108–111; also Appendix, pp. I and II. Supplement the lesson with notes from Farmers' Buls. 44 and 398.

Practical exercises.—(1) Have the members of the class report the special formulas or brands used at their homes for corn, cotton, Irish potatoes, oats, and vegetables. Compare the percentages of essential elements in each case and explain why different formulas are used for different crops. (2) Compare the formulas reported by the pupils with those recommended in the textbook and in Farmers' Bul. 398.

Correlations.—Language: Have the members of the class copy in their notebooks all the reports in practical exercise 1. Arithmetic: Continue the work as suggested in the previous lesson.

LESSON FOUR.

SUBJECT: HOME ORCHARD. TOPICS: (1) PLANTING AND TRAINING YOUNG GRAPE VINES; (2) PRUNING AND TRAINING BEARING VINES.

Young vines.—Making cuttings, grafting, planting cuttings or rooted vines, first pruning, summer pruning.

Bearing vines.—Principles, objects, and methods of pruning; training, the trellis; pruning implements.

Class assignment.—Give to the class as notes material found in Farmers' Buls. 471, pp. 12–16; 181, pp. 22, 23, and 30–32.

Practical exercises.—(1) Make a trip with the class to a good orchard to observe practice in pruning. Make previous engagement

with the farmer. (2) Have the pupils bring grape canes from their homes and give them practice in making and setting cuttings. If vines are growing on the school grounds, follow directions found in Farmers' Bul. 471 in pruning and training.

Correlations.—Language and drawing: Have the pupils write descriptions and make sketches of cuttings, properly pruned vines, and trellises for training. Arithmetic: Develop problems on the cost of trellising 100 vines by different methods.

LESSON FIVE.

SUBJECT: HOME ORCHARD. TOPIC: PRUNING TREES.

Subtopics.—Pruning at the time of planting; shaping the young tree; later pruning; fruits that most need pruning; implements; after treatment.

Class assignment.—Duggar's, pp. 221–224. Supplement with notes from Farmers' Buls. 181 and 491.

Practical exercises.—(1) If practicable, take the members of the class to a near-by orchard to observe practice in pruning. (2) Have pupils submit written reports on the methods of pruning practiced at their homes. (3) Club work or a home project with a few fruit trees is desirable, especially in sections where fruit growing is an important industry. For instructions write to the Alabama Polytechnic Institute, Auburn, Ala., or the Department of Agriculture, Washington, D. C.

Correlations.—Language and drawing: Make a drawing and tell how to make a proper cut. Make drawings of pruning implements. Have pupils copy in the class notebooks the reports on pruning. Geography: What States lead in the production of apples, peaches, and oranges? Locate these States on the map. What effect has climate on the production of these fruits as indicated by the sections in which they succeed best?

LESSON SIX.

SUBJECT: HOME ORCHARD. TOPIC: (1) SPRAYING; (2) CULTIVATION AND FERTILIZATION.

Spraying.—San José scale, peach curl, brown rot, fire blight, apple scab; materials, equipment.

Cultivation and fertilization.—Plowing the soil, applying fertilizers (12:2:8) liberally, thorough harrowing.

Class assignment.—Duggar's, pp. 229–232; Appendix, pp. III and IV; pp. 217. Supplement with notes from Farmers' Bul. 243; Alabama Experiment Station Buls. 144 and 156.

Practical exercises.—(1) If practicable take the members of the class to a near-by orchard to observe practice in spraying. (2) Re-

quire members of the class to make written reports on the spraying at their homes covering such phases as the formulas of spraying materials used, the spraying machinery, the fruits sprayed, and the diseases or insects combated. (3) Fruit-club or home-project members should spray, cultivate, and fertilize their trees.

Correlations.—Language and drawing: Describe and make sketch of a barrel spray. History: Have pupils write accounts of the introduction and spread of damage done by fruit diseases found in the community. Arithmetic: Develop problems on the cost of sprays. See United States Department of Agriculture Bul. 132.

LESSON SEVEN.

SUBJECT: HOME GARDEN. TOPIC: PLANTING IN HOTBEDS AND IN THE OPEN.

Hotbeds.—These should be given constant attention to prevent overheating and to secure ventilation. Tomato, eggplant, and pepper seeds should be sown in the hotbed about the middle of the month. Melon plants should be started in boxes in the southern part of the State. Plants from seeds sown in January should be ready to transfer to the cold frame, and after being hardened off set in the open.

Planting in the open.—Winter rains have leached much of the available fertility from garden soils, hence it is necessary to apply well-rotted manure or high-grade fertilizers, preferably both. Apply an 8:2:8 high-grade fertilizer at the rate of 500 to 1,000 pounds per acre.

Irish potatoes, cabbage, onions, radishes, lettuce, spinach, turnips, carrots, and English peas should be planted this month. Soak seed potatoes for two hours in a formalin solution (40 per cent formaldehyde) consisting of 1 ounce of formalin and 2 gallons of water.

Class assignment.—Duggar's, pp. 185–191. Supplement the lesson with notes from Alabama Experiment Station Circ. 14, Parts I and II; Farmer's Buls. 220, 255, 354, 433, 434, and 544.

Practical exercises.—(1) Prepare the soil and begin planting vegetables on the school or home gardens. The pupils should plant such vegetables as potatoes, onions, lettuce, turnips, radishes, and peas. (2) Club members should plant tomato seed either in hotbeds or boxes. Plow and harrow the soil that is to be used for the tomato plat. Well-rotted manure should be applied before the soil is harrowed.

Correlations.—Language: Have the members of the class make written reports of the work done this month in their gardens. Those who do not have plats of their own should be required to report on the work done in the home gardens. Arithmetic: From the reports made by the pupils of the class develop problems to determine the cost of the gardens this month, taking into account labor, fertilizer, and seed.

LESSON EIGHT.

SUBJECT: POULTRY. TOPIC: INCUBATION.

Natural incubation.—The hen, how to set the hen, care of the sitting hen.

Artificial incubation.—Types of incubators, selecting the incubator, locating the incubator, the temperature to maintain, care of the lamp, turning and cooling the eggs, care of machine at hatching time.

Class assignment.—The foregoing outline is based largely on Farmers' Bul. 585. Let the teacher secure a copy of this bulletin and give the class notes on the foregoing phases of the subject. Supplement these notes with reading exercises from farm papers. See also Farmers' Bul. 287.

Practical exercises.—(1) Club members or pupils that have projects with poultry should make plans and set one or more hens this month. If the pupil has charge of a large flock of hens it might be advisable to invest in an incubator. Get the work of incubation started this month. Keep exact records as to dates, eggs used, and other features of incubation. (2) Require pupils that have no projects with poultry to make observations at their homes and submit written reports covering such points as the number of hens being set, the number of eggs under each, the kind of nests used, and the care of the hens. If incubators are used at any of these pupils' homes, have the pupils report on the following points: The kind, capacity, and location of the incubator; the temperature maintained, and the attention given the eggs.

Correlations.—Language: Club members and others having projects with poultry should prepare tables for keeping records in connection with this incubating work. Written reports provide additional language work.

MARCH.

LESSON ONE.

SUBJECT: SOIL. TOPIC: PREPARING SEED BED.

Subtopics.—Breaking, harrowing, dragging, or rolling.

Class assignment.—Duggar's, pp. 70–72. Supplement the lesson with notes from Farmers' Buls. 81, 537, and 601.

Practical exercises.—(1) Have members of the class submit a list of implements used in plowing, harrowing, dragging, or rolling the land at their homes. Also have them report whether the land was plowed in the fall or winter, whether it grew a cover crop, or whether it is unplowed stubble or stalk land. (2) If practicable accompany the pupils of the class to a near-by field where good work is being done in the way of preparing the seed bed. Take notes on the implements used in plowing, harrowing, rolling, or dragging.

Correlations.—Language: The pupils' reports provide written exercises. Drawing: Have pupils make a sketch of a turn plow, locating the parts—namely, handles, beams, share, moldboard, and landslide. History: Have some member of the class prepare and read a statement giving an account of the community methods that have been and are now employed in turning land, including the kinds of plows used. Let this statement date as far back as reliable information may be secured. Arithmetic: Develop problems showing the economy in using large plows instead of small ones in turning land. A man with a 2-horse plow can turn 2 acres per day at a cost of $2.50. A man with a 1-horse plow can turn 1 acre per day at a cost of $2. Find the difference in cost in breaking fields of 10, 20, and 30 acres.

LESSON TWO.

SUBJECT: POULTRY. TOPIC: BROODING.

Natural brooding.—The hen, the coop, handling the chicks, feeding, keeping down lice, protecting from enemies.

Artificial brooding.—The brooder, testing the brooder, removing chicks from the incubator to the brooder, teaching chicks to find heat, regulating the temperature, feeding. Fireless brooders—location, teaching chicks to keep warm.

Class assignment.—The teacher should read carefully Farmers' Bul. 624 and give the class notes covering the foregoing outline. See also Farmers' Buls. 287 and 585.

Practical exercises.—(1) Club members should provide brood coops for their hens and chicks. See page 13, Farmers' Bul. 574, and page 4, Farmers' Bul. 624. If artificial brooding is practiced, see pages 8 and 10, Farmers' Bul. 624. (2) Require pupils that have no projects with poultry to submit written reports as to the kinds of brooding coops used with hens, and in case of artificial brooding the reports should cover descriptions of the brooders used. Successes and failures in brooding should be noted and accounted for.

Correlations.—Language and drawing: Have pupils write descriptions and make drawings of the brooding coops used in connection with poultry projects or used at their homes. Arithmetic: Find the cost in labor and materials of the several brooders and brooding coops reported. How many broilers at the prevailing price would be necessary to cover the cost of each brooding coop? Does it appear to be economical to provide good coops?

LESSON THREE.

SUBJECT: FARM ANIMALS. TOPIC: GRAZING CROPS FOR HOGS.

Temporary.—The accompanying table suggests a series of grazing crops that provide hog pasturage for almost the entire year. A selec-

tion adapted to local conditions should be made and preparations begun to provide continuous pasturage for the hogs.

Grazing crops for hogs.

Crop.	When planted.	How planted—seed per acre.	Grazing period.
Melilotus on lime lands.	February and March.	Broadcast, 10 to 20 pounds; add ½ if unhulled.	60 days after seeding; at any season when growing.
Cowpeas	May 1 to July 1	1½ bushels seed broadcast; ½ bushel in drills.	75 to 90 days after seeding; lasts from 30 to 60 days.
Soy beans	do	1½ bushels seed broadcast; ½ bushel in drills.	90 to 100 days after seeding; lasts from 30 to 90 days.
Velvet beans	Apr. 1 to May 15.	½ to 3¼ pecks in drills	150 to 180 days after seeding; after frost; lasts all winter.
Peanuts, Spanish.	May 1 to July 1	1 to 2 bushels, not hulled, in drills.	100 to 120 days after seeding; lasts 60 to 90 days.
Lespedeza	March and April.	1 bushel or 24 pounds seed, broadcast.	75 to 90 days after seeding; grazed any time during warm weather or while growing.
Sorghum	Apr. 15 to July 1.	Broadcast, 1 to 2 bushels seed; drill 1 to 2 pecks.	60 to 90 days after seeding; lasts 30 to 60 days.
Chufas	Mar. 15 to June 1.	3 to 4 pecks in rows	130 to 150 days after planting; lasts all winter.
Sweet potatoes	Plants set in May.	7,000 to 9,000 plants, 3-foot rows, 1½ to 2 feet in row.	100 to 150 days after planting; lasts 60 to 90 days.
Rape	Feb. 1 to Mar. 10.	In rows, 3 to 4 pounds seed; broadcast, 6 to 8 pounds seed.	50 to 65 days after seeding; fall seeding; lasts all winter; spring seeding until May 15.

Permanent.—Bermuda and bur clover. Set Bermuda in the spring; seed bur clover in August.

Class assignment.—Duggar's, pp. 162, 165, 174, 178, and 180. Give the class notes from Farmers' Bul. 411, pp. 22–33; Alabama Experiment Station Bul. 168.

Practical exercises.—(1) Pig-club members should make preparations for spring, summer, and fall hog pastures. Make selections from crops mentioned in this lesson and plan to have green feed during the entire year. (2) Have all members of the class report in writing as to the permanent pastures at their homes covering such points as the kinds, the number of acres in each, and the success with which grown. (3) Review the September lesson on Sow and Pig Management.

Correlations.—Language: The written reports required in the practical exercises provide language work. Drawing: Have the pupils secure dimensions and draw to scale the permanent pastures at their homes. Show the location of streams, shades, and the like. Arithmetic: Find the area in acres of the several pastures reported. Estimate the average number of hogs to each pasture and find the pasturage area for each hog.

LESSON FOUR.

SUBJECT: INSECTS AND HEALTH. TOPICS: (1) FLIES; MOSQUITOES.

Flies.—Life history, carriers of disease, remedies and preventives.

Mosquitoes.—Important kinds, how to recognize the malarial and yellow fever mosquitoes, how disease is spread by mosquitoes, protection and remedies.

Class assignment.—Duggar's, pp. 272–276. Supplement the lesson with notes from Farmers' Buls. 444, 459, and 463; Alabama Press Buls. 55 and 56.

Practical exercises.—(1) Bring to school a bottle or can of water containing wrigglers (wiggle tails) and cover the surface of the water with a layer of oil. Study developments and take notes. (2) Drain all pools about the home or the school, remove all discarded vessels, and screen water barrels and tanks. (3) Secure and bring to school in a closed vessel some material containing eggs or larvæ of flies. Examine carefully each day and take notes on the developments. (4) Make a fly trap by instructions found in Alabama Press Bul. 56.

Correlations.—Language and drawing: Write an account of the life history of the fly and make drawings of each stage. Make a drawing of a malaria mosquito at rest. Arithmetic: A female fly that survives the winter lays four batches of 120 eggs each. Sixty eggs of each batch produce female flies. They in turn lay four batches of 120 eggs each of which 60 produce female flies. Reproduction continues at this rate through 12 generations in a season. Find the number of flies produced in the twelfth generation. Emphasize the importance of destroying flies in March.

LESSON FIVE.

SUBJECT: INSECTS. TOPICS: (1) INSECT DEFINED; (2) INSECT GROWTH; (3) HOW INSECTS FEED.

Insects defined.—What is an insect? The principal parts.

Insect growth.—Insects developing without much change, stages in an insect's life, transformation from caterpillar to butterfly.

How insects feed.—Biting and sucking.

Class assignment.—Duggar's, pp. 246–256. Supplement with notes from Farmers' Bul. 127 and Alabama Experiment Station Bul. 139.

Practical exercises.—(1) Look for adult boll weevils, peach borers, plum curculios, and potato beetles. Make and mount a collection of insects this month. See Farmers' Bul. 606. (2) Club members should examine carefully their vegetables and plan to combat insect attacks.

Correlations.—Language and drawing: Describe and draw the several insects collected and mounted. History: Have each pupil of the class write an account of each insect as to date of introduction into the community, damage done, spread, and methods of combating. Arithmetic: Develop problems to determine damage done by insects the previous year based on community estimates.

LESSON SIX.

SUBJECT: HORTICULTURE. TOPICS: (1) SPRAYING CONTINUED; (2) GARDENING.

Spraying.—Continue spraying for San José scale, peach leaf curl, brown rot, and apple scab. See February lesson on spraying.

Spray apples, pears, and quinces for codling moth; plums and peaches for curculio and rot; grapes for anthracnose, mildew, and rot. For codling moth use 1 pound of dry arsenate of lead to 50 gallons of water, with an addition of 2 pounds of lime to make a white spray. The same spray should be used for the curculio. Spray grapes with Bordeaux mixture.

Gardening.—Transplant peppers and cabbage. In the southern part of the State set eggplants. Bed sweet potatoes. Plant in the open bush beans, Lima beans, cucumbers, okra, parsnips, and salsify.

Class assignment.—Duggar's, pp. 258–260, 229–232, 185, 186, and 190. Supplement the lesson on sprays with notes from Alabama Experiment Station Buls. 139 and 144; Circ. 1; Farmers' Buls. 284, 440, and 492. Supplement the lesson on gardening with timely notes from Alabama Experiment Station Circ. 14, Parts I and II; Farmers' Buls. 232, 255, and 289.

Practical exercises.—(1) Continue the garden work on the school or home plats (2) Tomato club members should keep their plats thoroughly plowed and harrowed. Break up all clods and keep down the growth of weeds. (3) Pupils that have no projects and are not club members should be required to make written reports covering such points as the vegetables being planted at their homes, from what they are reproduced, whether from seed, bulbs or tubers, and how planted, whether in drills or on beds.

Correlations.—Language: Reports on work with home or school garden plats and work being done in the gardens at the homes of the pupils provide suitable written work. Each pupil should be required to copy all such reports in the notebooks. Arithmetic: Based upon the foregoing reports develop problems in connection with the garden work of the month. Labor, seed, and fertilizers should be taken into account.

LESSON SEVEN.

SUBJECT: SMALL FRUIT. TOPIC: SETTING STAWBERRIES.

Planting.—Soil should have abundant humus and be supplied with well-rotted manure; preparation should include thorough fall breaking and spring harrowing; plants should stand 2 feet apart, roots should be well pruned, and the soil should be packed firmly about them; crowns should not be covered.

Varieties.—Excelsior for early berries, Klondyke and Lady Thompson for medium, Aroma for late.

Fertilizers.—Apply at the rate 500 to 1,000 pounds of 12:2:10 formula per acre.

Class assignment.—Duggar's, pp. 217–219. Supplement the lesson with notes from Farmers' Buls. 198 and 664.

Practical exercises.—(1) A tenth of an acre of strawberries is recommended for a permanent home project. Each member of the class should be encouraged to assume responsibility for such a plat at his or her own home. (2) Secure written reports from the members of the class covering such points as the varieties of strawberries grown at their homes, the variety or varieties that have proved most successful, when planted, and how.

Correlations.—Language: Each pupil should be required to make a nice copy of the foregoing report. Geography: The counties of Baldwin, Chilton, Conecuh, Cullman, Escambia, Mobile, and Sumter are among the leading in the production of strawberries. Locate these on the map. What conditions make it possible for these counties to engage in the strawberry industry?

LESSON EIGHT.

SUBJECT: SOIL. TOPICS: (1) GERM LIFE IN THE SOIL; (2) SOME LEGUMINOUS CROPS.

Germ life in the soil.—Germs that help, aiding the germ friends, germ enemies, adding germs to the soil.

Some leguminous crops.—Alfalfa, red clover, Japan clover.

Class assignment.—Duggar's, pp. 244, 245, 168–172, 176–178. Supplement the lesson with notes from Farmers' Buls. 339, 441, and 455.

Practical exercises.—(1) Make a list of all the leguminous plants that are grown in the community. (2) Have members of the class bring to school leguminous plants found at their homes. Study stems and leaves to be able to recognize each plant at sight.

Correlations.—Geography: Japan clover (lespedeza) is so named as it is thought to have been introduced into this country from Japan. Locate Japan on the map. Compare it with Alabama as to latitude, longitude, climate, area, and agricultural productions.

APRIL.

LESSON ONE.

SUBJECT: POULTRY. TOPICS: (1) DISEASES; (2) PRESERVING EGGS.

Diseases.—Gapeworms, sorehead, fowl cholera, lice, crop bound—causes, symptoms, and treatment.

Preserving eggs.—Eggs to be stored, testing; preserving materials—water glass, lime water, salt, and bran.

Class assignment.—Give the pupils notes from Farmers' Buls. 287 and 530.

Practical exercises.—(1) Each club member should separate the male from the hens that are to produce eggs for market. As soon as the price of eggs reaches a point that is not profitable prepare to preserve the eggs for late fall and winter marketing. Follow instructions in Farmers' Bul. No. 287. (2) Have the members of the class make reports as to symptoms of diseased chickens at their homes. Compare these with the symptoms found in connection with the diseases studied.

Correlations.—Language: During this month each pupil of the class should be required to report weekly on the following facts at his home: The whole number of eggs laid, the number of eggs sold, the price received, the manner of disposing of the eggs—to local buyer or by parcel post. Arithmetic: From the foregoing facts develop problems adapted to needs of the class.

LESSON TWO.

SUBJECT: CROPS. TOPICS: PLANTING AND CULTIVATING CORN AND COTTON.

Subtopics.—Kinds of seed beds, distance between plants, fertilization, cultivation.

Class assignment.—Duggar's, pp. 125–127, 151–153. Supplement the lesson with notes from Farmers' Buls. 364, pp. 10–15; 537, pp. 14–15; 601.

Practical exercises.—(1) Club members should be preparing the land and planting their plats of corn and cotton. (2) Have the members of the class report the different methods employed in planting corn and cotton at their homes. (3) What is meant by a water furrow? A balk? A bed?

Correlations.—Language: Written work is provided for by the reports on planting methods required in practical exercises. Arithmetic: Have club members report the labor, fertilizers, and seed required to plant their plats of corn or cotton. From these facts develop problems to meet the needs of the class. History: The Indians planted corn when the leaves of oak trees were as large as a squirrel's ear. How does the present practice in your community compare with that of the Indians? Why is Indian corn so called?

LESSON THREE.

SUBJECT: HONEYBEES. TOPICS: HABITS, WORK, AND MANAGEMENT OF BEES.

Class assignment.—Duggar's, pp. 277–280. Supplement the lesson with notes from Farmers' Bul. 447. (These are important topics, and it may be necessary to make two lessons to treat them properly.)

Practical exercises.—(1) Go with the class to a home where bees are kept. Observe them and take notes on their movements. (2) Secure some honeycomb. Look for cells prepared for storing honey and those for rearing young bees. (3) The care and management of a few hives of bees provide an excellent project.

Correlations.—Language and drawing: Write a description and make a drawing of the type of hives used in the community.

LESSON FOUR.

SUBJECT: CROPS. TOPIC: HOW PLANTS FEED.

Food from the soil.—The plant food in the soil must be dissolved in water before it can be taken up by the roots and used by the plant. There are at least 10 elements of plant food taken from the soil, but the most important are nitrogen, phosphorus, potash, and calcium (lime).

Food from the air.—Plants take food from the air through tiny openings in the underside of the leaf. Carbon is the only element of plant food taken from the air, but it unites with water to make starch, which constitutes the great bulk of the plant.

Class assignment.—Duggar's, pp. 32–37. Supplement the lesson with notes from Farmers' Bul. 218, pp. 12–15.

Practical exercises.—(1) See "Experiment" and "Exercise," Duggar's, p. 36. (2) See "Exercises 3, 4, and 5," Farmers' Bul. 218, p. 14. (3) Club members should take an active interest in these exercises to learn fully the relations between their crops and the soil and air.

LESSON FIVE.

SUBJECT: CROPS. TOPIC: PREPARING FOR SILAGE.

Why silage should be made.—Best and cheapest form of succulent food; a very palatable food; a substitute for pastures during winter months.

Silage crops.—Corn, sorghums, cowpeas, soy beans, clover.

Harvesting the crops.—Time, equipment.

Making silage.—Cutting, packing, moistening, covering.

Class assignment.—Duggar's, pp. 124, 126, 174, 178, and 180. The teacher should give the class notes from Farmers' Bul. 578 covering the foregoing outline. This lesson is of special importance in stock-raising and dairy sections of Alabama.

Practical exercises.—(1) If there is a silo in the community, take the pupils of the class to visit it. If possible, secure from the owner the following information: Crops used in making silage, the length of the particles of silage, the time of making silage, and the manner of filling the silo. Require the pupils to take notes on the foregoing

points. (2) If there is a silo at the home of any member of the class require that pupil to make a written report covering the points mentioned in exercise 1.

Correlations.—Language: Require the pupils to copy in their booklets the notes and reports on the foregoing exercises. Arithmetic: (1) One cow consumes the silage from 8 square feet of surface to a depth of 2 inches each day. What should be the diameter of a silo to feed a herd of 10 cows? Fifteen cows? Twenty cows? (2) If the silage is fed an average depth of 2 inches each day, what should be the height of a silo to feed a herd 120 days? One hundred and eighty days? (3) If silage weighs an average of 35 pounds a cubic foot, how many tons in a silo 14 feet in diameter and 30 feet high?

LESSON SIX.

SUBJECT: HOME ORCHARD AND GARDEN. TOPICS: (1) CULTIVATING THE ORCHARD; (2) PLANTING AND CULTIVATING THE GARDEN.

The orchard.—Plowing; fertilizing; planting low-growing, intercultural crops.

The garden.—Transplant sweet potatoes, eggplants, cantaloups, and make preparations to set tomatoes in May. Plant squash and pumpkin seeds. Continue planting beans and setting cabbage plants.

Class assignment.—Duggar's, pp. 216–217, 190, 162, 163, 164. Supplement the lesson with notes from Alabama Experiment Station Circ. 14, Part I, pp. 19, 29, and 36; Part II, pp. 68, 70, 72, and 73; Bul. 156, pp. 121, 122; Farmers' Buls. 491, 632, 642, and 647.

Practical exercises.—(1) Continue planting vegetables in the home and school gardens. (2) Tomato-club members should prepare to set tomato plants in May. The tomato plants should now be transferred from boxes or hotbeds to cold frames.

Correlations.—Drawing: Make a plan of the home garden, showing the location of the different kinds of vegetables. Arithmetic: Develop problems to determine the cost of labor, fertilizers, and seeds used this month in the school and home gardens.

LESSON SEVEN.

SUBJECT: FLOWERS. TOPICS: (1) IMPORTANCE; (2) PARTS; (3) POLLINATION.

Importance.—Plants produce flowers; flowers develop into seed; seed develop into plants.

Parts of flowers.—(1) Calyx, the divisions of which are called sepals; (2) corolla, the divisions of which are called petals; (3) stamens, the divisions of which are the filament, the anther, and the pollen; (4) pistil, the divisions of which are the ovary containing the ovules, the style, and the stigma.

Essential parts of the flower.—The stamen and the pistil with their divisions. They produce seed.

Pollination.—(1) Ripened pollen grains when shed by the anther either fall upon or are carried to the stigma of the pistil. The pollen grain produces a thread-like growth, which passes through the style into the ovary, where it gives off a cell to unite with an ovule. This union develops a seed. (2) Kinds of pollination: (*a*) Self-pollination, (*b*) cross-pollination. The latter is accomplished by winds and insects.

Class assignment.—Duggar's, pp. 7–20. (Omit paragraphs that are not essential.)

Practical exercises.—Have the pupils bring to school for study flowers of turnips, peaches, apples, strawberries, honeysuckles, and dogwood. Learn to name the principal parts. Which of these flowers are visited by insects?

Correlations.—Language and drawing: Have each member of the class describe and make drawings of one or more of the flowers studied.

LESSON EIGHT.

SUBJECT: WEEDS. TOPICS: (1) THE INJURY WEEDS DO; (2) KINDS AND HABITS; (3) METHODS OF COMBATING.

The injury weeds do.—They use plant food, take up moisture, make cultivation expensive.

Kinds and habits.—Annuals, biennials, perennials.

Methods of combating.—Uprooting, cutting off tops to prevent seeding, smothering, selecting clean seed.

Class assignment.—Duggar's, pp. 182–184. Supplement the lesson with notes from Farmers' Bul. 660.

Practical exercises.—Have the pupils bring to school for study specimens of all weeds that may be found in the gardens, orchard, or fields at this time. Learn to name them and list the names with a brief description in the class notebook. Those that can not be identified should be sent to the Alabama Polytechnic Institute, Auburn, Ala., for classification.

Correlations.—Language and drawing: Make written descriptions and drawings of the weeds studied. History: Require the pupils to prepare an account covering the following points with reference to the most injurious weeds found in the community: The dates of introduction, the spread, the damage done, and the methods of combating.

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